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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,943

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Satoru Wakamatsu

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EXAMINER

MARTINEZ, BRITTANY M

ART UNIT

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/567,943	Applicant(s) WAKAMATSU ET AL.	
	Examiner BRITTANY M. MARTINEZ	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

Applicant's arguments/remarks and amendments filed on April 11, 2008, have been carefully considered. **Claims 1 and 3-6** are pending in the instant application. **Claim 2** was canceled and **Claims 1 and 3-4** were amended in Applicant's response, filed April 11, 2008. Upon further consideration, the restriction requirement filed October 31, 2007 has been withdrawn. **Claims 1 and 3-6** have been examined.

Priority

Acknowledgement is made of Applicant's submission of an English-language translation of the priority document, JP 2003-293197, in the response filed April 10, 2008.

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in the prior Office Action.

1. **Claims 1 and 6** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. The portion of **Claims 1 and 6** that reads "...at least one of...and..." results in an improper Markush group. This could be corrected by changing the claim to read "...at least one member of the group consisting of...and..." See MPEP § 2173.05(h).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 1 and 3-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamatsu et al. (US 6,861,144) in view of Rollmann et al. (US 4,374,093).

7. With regard to **Claim 1**, Wakamatsu discloses a tubular reaction vessel comprising a longitudinally-extending wall with a space therein (Wakamatsu, FIG. 3,1), wherein a silicon deposition feedstock gas inflow opening (Wakamatsu, FIG. 3, 5) and a deposited silicon discharge opening (Wakamatsu, FIG. 3, 2) are provided at an upper portion and a lower end portion respectively.

8. With regard to **Claims 4**, Wakamatsu discloses a tubular reaction vessel wherein the flow resistance-increasing region is a protrusion provided in the tubular reaction vessel, the reaction vessel is reduced in thickness from the external wall in the protrusion-provided area (Wakamatsu, FIG. 3, 1), and the tubular reaction vessel is arranged to be heated by a high frequency heating coil and includes means for reducing high frequency energy from the high frequency heating coil in the protrusion-provided area relative to the other area (Wakamatsu, FIG. 3, 3; c. 10, l. 5-13), substantially as in the instant.

9. With regard to **Claims 5**, Wakamatsu discloses a process for producing silicon, comprising: providing a tubular reaction vessel comprising a longitudinally-extending wall with a space therein (Wakamatsu, FIG. 3,1), wherein a silicon deposition feedstock gas inflow opening (Wakamatsu, FIG. 3, 5) and a deposited silicon discharge opening (Wakamatsu, FIG. 3, 2) are provided at an upper portion and a lower end portion

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respectively; introducing a silicon deposition feedstock gas containing a chlorosilane through the silicon deposition feedstock gas inflow opening; and producing polycrystalline silicon from the chlorosilane-containing silicon deposition feedstock gas in the heated reaction vessel (Wakamatsu, "Abstract;" c. 4, l. 10-62).

10. Wakamatsu does not explicitly disclose a plurality of flow resistance-increasing regions being created on a wall surface of the tubular reaction vessel that is contacted with the feedstock gas (**Claim 1**); the plurality of flow resistance-increasing regions being protrudent or concave (**Claim 1**); each flow resistance-increasing region being a protrusion provided in the tubular reaction vessel, and an external wall of the reaction vessel being reduced in thickness in the protrusion-provided area (**Claim 3**); each flow resistance-increasing region being a protrusion provided in the tubular reaction vessel, and high frequency heating coils including means for reducing high frequency energy from the high frequency heating coil in the protrusion provided area relative to the non-protrusion provided area (**Claim 4**); a flow resistance-increasing region being created on a wall surface of the tubular reaction vessel that is contacted with the feedstock gas (**Claim 5**); or the flow resistance-increasing region being at least one of protrudent, concave, and sloped regions (**Claim 6**).

11. With regard to **Claims 1 and 3-6**, Rollmann discloses an apparatus comprising baffles which are protrudent from the external wall of the apparatus (Rollmann, "Fig. 2" and "Fig. 2A"). Further, it is well known in the art that baffles function in flow resistance in apparatuses. With regard to **Claim 3**, Rollmann discloses an external wall of the reaction vessel being reduced in thickness in the protrudent-provided area (Rollman,

“Fig. 2” and “Fig. 2A”). With regard to **Claim 4**, it would have been obvious to one of ordinary skill in the art to modify the high frequency heating coils of Wakamatsu with a means to reduce the high frequency energy in the protrusion provided area relative to the non-protrusion provided area in order to allow for uniform heating and adequate heat transfer.

12. Thus, it would have been obvious to one of ordinary skill in the art to modify the apparatus/process of Wakamatsu with the baffles of Rollmann in order to obtain an apparatus/process with sufficient mixing and residence time of reactants (Rollmann, c. 5, l. 58-66).

Response to Amendments

Applicant's amendments, filed April 10, 2008, with respect to the specification and claims have been fully considered and are accepted. The objections to the specification and claims, filed December 10, 2007, and the 35 U.S.C. § 112 claim rejections, filed December 10, 2007, have been withdrawn.

Response to Arguments

1. Applicant's arguments, filed April 10, 2008, with respect to the title objection in the previous Office action have been fully considered and are persuasive. The objection of the title has been withdrawn.

2. Applicant's arguments, filed April 10, 2008, regarding the Claim Rejections under 35 U.S.C. § 102(e), have been fully considered and are partially persuasive.

3. Applicant's argument that the flow resistance-increasing regions of the instant invention function in decreased diffusion-blocking upward flow and effective mixing of the feedstock gas, while Wakamatsu discloses a region of a reaction vessel wherein the residence time of the reaction gas is increased, is acknowledged. However, the intended function of the respective reaction vessel sections is not relevant to the patentability of the apparatus.

4. In response to Applicant's argument that the references fail to show certain features of Applicant's invention, it is noted that the features upon which Applicant relies (i.e., a *plurality* of flow resistance-increasing regions) were not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Further, Applicant's arguments with respect to the plurality of flow resistance-increasing regions have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's argument that the tapered shape of the vessel disclosed by Wakamatsu is clearly different than the flow resistance-increasing regions of the instant invention is acknowledged. However, shape is not the consideration in patentability. According to the claim language prior to Applicant's amendment, Wakamatsu was applicable. See previous rejection.

6. Applicant's arguments that Wakamatsu fails to disclose a protrusion provided area in the tubular reaction vessel, and that an external wall of the vessel is reduced in thickness in the protrusion-provided area are partially persuasive. Wakamatsu does in

fact teach a protrusion provided area (Wakamatsu, Fig. 4, 1). The Examiner agrees with Applicant's argument that Wakamatsu does not explicitly disclose an external wall of the vessel being reduced in thickness in the protrusion-provided area. However, Applicant's arguments with regard to external wall thickness are moot in view of the new ground(s) of rejection.

7. Applicant's arguments, filed April 10, 2008, regarding the provisional non-statutory obviousness-type double patenting rejection over Claim 1 of copending Application No. 10/518197, have been fully considered and are persuasive. The provisional non-statutory obviousness-type double patenting rejection of **Claim 1** has been withdrawn.

Conclusion

1. No claim is allowed.
2. In general, prior art renders the claimed invention obvious.
3. Applicant is required to provide pinpoint citation to the specification (i.e. page and paragraph number) to support any amendments to the claims in all subsequent communication with the examiner. **No new matter will be allowed.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is (571) 270-3586. The examiner can normally be reached Monday-Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wayne Langel/
Primary Examiner, Art Unit 1793

BMM

/Brittany M Martinez/
Examiner, Art Unit 1793